

## IN THE CLAIMS

Claim 1. (currently amended)      A method of digitally canceling interference on a first plurality of received ~~signal~~ signals within a satellite payload comprising adaptively canceling interference on the first plurality of received ~~signal~~ signals using ~~[[an]]~~ a second plurality of interference reference feedback ~~signal~~ signals acquired downstream from a digital processor.

Claim 2. (Currently Amended)      A method as in claim 1 further comprising subtracting ~~[[an]]~~ a counter-interference signal from the first plurality of received ~~signal~~ signals to form a desired signal.

Claim 3. (Currently Amended)      A method as in claim 2 further comprising digitally processing said desired signal to generate said ~~feedback~~ second plurality of interference reference feedback signals ~~signal~~.

Claim 4. (Currently Amended)      A method as in claim 3 further comprising correlating said second plurality of interference reference feedback signals ~~signal~~ to said desired signal to generate an error signal.

Claim 5. (Currently Amended)      A method as in claim 4 wherein adaptively canceling interference on the first plurality of received ~~signals~~ ~~signal~~ further comprising generating said counter-interference signal based on said error signal to cancel said interference.

Claim 6. (Currently Amended)      A method as in claim 5 wherein adaptively canceling interference further comprises iteratively canceling interference on the first plurality of received ~~signals~~ ~~signal~~ until said error signal equals zero.

Claim 7. (Original) A method as in claim 1 wherein said adaptively canceling interference further comprises digitally and accurately replicating the interference.

Claim 8. (Currently Amended) A method as in claim 1 ~~further comprising simultaneously digitally canceling interference on a plurality of received signals wherein~~ said adaptively canceling interference on the first plurality of received signals is accomplished simultaneously.

Claim 9. (Currently Amended) A method as in claim 1 ~~further comprising sequentially digitally canceling interference on a plurality of received signals wherein~~ said adaptively canceling interference on the first plurality of received signals is accomplished sequentially.

Claim 10. (Currently Amended) A method of digitally canceling interference on a first plurality of received signals ~~signal~~ within a satellite payload comprising:

receiving a communication signal having interference;

converting said communication signal into the first plurality of received signals ~~signal~~;

subtracting a counter-interference signal from the first plurality of received signals ~~signal~~ to form a desired signal;

digitally processing said desired signal to form ~~[[an]]~~ a second plurality of interference reference feedback signals ~~signal~~;

correlating said second plurality of interference reference feedback signals ~~signal~~ to said desired signal to generate an error signal; and

adaptively canceling interference on the first plurality of received signals ~~signal~~ based on said error signal by generating said counter-interference signal to cancel said interference.

Claim 11. (Currently Amended) A satellite communication system comprising:

- a first antenna for receiving a communication signal;
- an analog-to-digital converter (ADC) electrically coupled to said first antenna, said ADC converting said communication signal to a first plurality of received signals ~~signal~~;
- a satellite payload circuit comprising
  - a first input, said first input is electrically coupled to said ADC;
  - a second plurality of second inputs; input, and
  - a third plurality of outputs ~~an output, said first input is electrically coupled to said ADC;~~
  - a subtractor electrically coupled to said ADC, said subtractor subtracting a counter-interference signal from said first plurality of received signals to form a desired signal;
  - a digital processor electrically coupled to said subtractor, said digital processor generating a fourth plurality of interference reference feedback signals from said desired signal;
  - a correlator electrically coupled to said subtractor, said correlator comparing said fourth plurality of interference reference feedback signals to said desired signal to generate an error signal; and

a controller electrically coupled to said correlator and said subtractor, said controller adaptively canceling interference on said first plurality of received signals based on said error signal;

said satellite payload circuit digitally processing said first plurality of received signals ~~signal~~ to form said fourth plurality of ~~[[an]]~~ interference reference feedback signals ~~signal~~; and

a fifth plurality of feedback signal paths ~~[[path]]~~ electrically coupling said third plurality of outputs ~~output~~ to said second plurality of second inputs ~~input~~, said fifth plurality of feedback signal paths ~~[[path]]~~ transferring said fourth plurality of interference reference feedback signals ~~signal~~ from said third plurality of outputs ~~output~~ to said second plurality of second inputs ~~input~~.

Claim 12. (canceled)

Claim 13. (Currently Amended)      A communication system comprising:

a first antenna for receiving a communication signal;

an analog-to-digital converter (ADC) electrically coupled to said first antenna, said ADC converting said communication signal to a first plurality of received signals ~~signal~~;

a subtractor electrically coupled to said ADC, said subtractor subtracting a counter-interference signal from said first plurality of received signals ~~signal~~ to form a desired signal;

a digital processor electrically coupled to said subtractor, said digital processor generating ~~[[an]]~~ a second plurality of interference reference feedback signals ~~signal~~ from said desired signal;

a correlator electrically coupled to said subtractor, said correlator comparing said ~~second plurality of~~ interference reference feedback ~~signals~~ ~~signal~~ to said desired signal to generate an error signal; and

a controller electrically coupled to said correlator and said subtractor, said controller adaptively canceling interference on said first plurality of received signals ~~signal~~ based on said error signal.

Claim 14. (canceled)